Sustainable Design For Schools Fact Sheet

Why Build a Green School?

Students, teachers and staff spend thousands of hours every year studying, working, eating and playing in schools across the Commonwealth. Many of these schools are old, while many were built with minimal thought given to the long-term. As a result, schools may experience poor indoor air quality, inadequate maintenance, and learning environments that can be uncomfortable. School buildings often use environmental and economic resources inefficiently, wasting energy and water, sometimes resulting in local environmental impacts. Sustainable design can play a significant role in addressing these issues. This fact sheet is designed to give the school administrator, teacher, parent or staff member a basic understanding of the issues associated with sustainable schools and how to begin promoting effective sustainable design strategies.

Benefits of a sustainably designed school	***Characteristics of a sustainable School***
➔ Improved learning environment	➔ Healthy inside and out
➔ Increased average daily attendance	➔ Thermally, visually, and acoustically comfortable
➔ Reduced operating costs	➔ Energy, material, and water efficient
➔ Increased teacher satisfaction	➔ Easy to maintain and operate
➔ Reduced liability exposure	➔ Safe and secure
➔ Reduced community environmental & health impacts	➔ A learning tool for the entire community

Elements of a Sustainable School

Indoor Air Quality Indoor air quality is affected by materials, solvents, and adhesives used in construction, items such as furniture and carpet which off-gas over time, products used in on-going cleaning and maintenance, and by poorly designed ventilation systems. Materials should be selected that do not contain toxic chemicals or promote the growth of mold. Adequate fresh air ventilation and air filtration should be provided, and in school renovations, make sure occupied areas are tightly sealed from areas under construction.

Comfortable Learning Environment Studies show that students' performance increases when learning environments are healthy and aesthetically pleasing. Pay attention to daylighting strategies, which should be integrated with electric lights to minimize the need for artificial lighting. Temperature and humidity should be maintained at comfortable levels, and noise from ventilation systems and other outside sources should be minimized.

Energy Efficiency The most effective way of reducing a school's construction and operating costs is through energy efficiency. Reducing the size of costly mechanical systems by increasing efficiency will allow funds to be spent on other critical items. Focus on a variety of energy efficiency design techniques, such as: proper insulation, efficient windows, a properly sealed building envelope, energy efficient lighting and appliances, variable speed motors, and control systems. Building commissioning (the post-construction testing and calibrating of building systems) will help insure that systems are functioning as designed.

Landscape Design and Management Landscape design should incorporate native species and other techniques to reduce water consumption, and improve water quality. Promote integrated pest management techniques to avoid dependence on pesticides and use organic fertilizers and recycled mulch. Landscaping can also be used to reduce heating and cooling loads on the building through vegetative shading and wind protection.

Material Selection Select durable products to avoid early replacement and increased maintenance costs. Choose materials that are non-toxic, have recycled content and come from sustainably harvested forests.

Proper Maintenance Once a building is built, ensure that operational and maintenance practices promote a clean, healthy and efficient building. Use integrated pest management techniques for pest control, avoid the purchase and use of toxic pesticides and cleaners, and clean all air handling systems regularly.

This fact sheet has been prepared by the Executive Office of Environmental Affairs and Office of Technical Assistance through a grant from Region 1 of the U.S. Environmental Protection Agency

Sustainable Design and Schools: Frequently Asked Questions

Does a green school have to cost more?

No. A school on any budget can be designed to be healthy and resource efficient. Some green strategies cost the same as traditional design, while others have a higher initial cost, but pay for themselves through reduced operating costs. Becoming a 'Green School' in Massachusetts may entitle your community to an additional 2% reimbursement from the School Building Assistance Program, which can mean millions to a community.

Will we have to sacrifice other needs such as number of classrooms or size of gym?

No. Since building a school using a healthy and efficient approach does not usually mean a higher price tag, your school can still be designed to meet the needs of the students and community.

If green design is so great, why aren't all schools doing it?

Green design is the result of a new awareness of the long-term health and resource efficiency implications of design and construction decisions. It looks at problems that have only been truly recognized recently, and have not yet been incorporated into the standard practices of traditional design and construction.

Have others done this before?

Yes, green schools are being built all around the country. Examples include every kind of school from day care facilities to large high schools. Twelve schools in Massachusetts are currently incorporating green design, while dozens of others are investigating a range of green options.

What would a green school look like?

A totally green school might look at all health and environmental impacts and use renewable energy, recycled and non-toxic materials, native plant species, etc. A slightly green school might just consider energy efficiency. Keep in mind the priorities of the community (e.g. indoor air quality, energy costs, etc.) and the ways in which those priorities can be addressed through specific sustainable design practices.

Where is green in the school building process?

While not all school projects go through the same process, many go through a needs assessment, feasibility study, community vote, design process, bid and then construction. The two most important stages for sustainable design are the feasibility study and the design process.

When is the right time to ask about 'green' school design and construction?

The sooner green design issues get raised with the School Building Committee, the better. It is never too late to integrate healthy and efficient strategies into a design, and you can consider greening your project even if you have already begun construction.

Who should be involved?

The School Committee, the design team and a 'green team' of parents are critical to a successful process. Utility companies and other local incentive programs should also be involved. You may also want to involve teachers, janitorial staff, and anyone else who will be working or caring for the property once it's built. Setting up a green task force will help tap into existing resources, educate the building committee and community about green options, and support the building committee in its efforts.

What resources are available?

For projects and funding information in Massachusetts, go to the green schools program at the Massachusetts Technology Collaborative *(www.mtpc.org/RenewableEnergy/Green_Schools.htm)*. For other information, go to any of the following sites: *www.sbicouncil.org; www.eren.doe.gov/energysmartschools/; www.epa.gov/building/schools; www.edfacilities.org; www.cee1.org/com/bldgs/schools.php3; or www.greenroundtable.org).*

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